# AIRS Version 6 Products and Services at GES DISC

AGU Fall Meeting, San Francisco, CA
Dec 9 – 13, 2013
A43B-0254

NASA/Goddard EARTH SCIENCES DATA and INFORMATION SERVICES CENTER (GES DISC)

***Research and operation communities are invited to take advantage of the improvements in AIRS Version 6 products and enjoy various services at GES DISC***
***http://disc.sci.gsfc.nasa.gov/AIRS***

**Feng Ding[1,2], Andrey K. Savtchenko[1,2] , Thomas J. Hearty[1,2] , Michael Theobald[1,2], Bruce Vollmer[1] , Asghar E. Esfandiari[1,2]**
[1]NASA Goddard Space Flight Center, [2]NASA Goddard Space Flight Center/SESDA

## ABSTRACT

The NASA Goddard Earth Sciences Data and Information Services Center (GES DISC) is the home of processing, archiving, and distribution services for data from the Atmospheric Infrared Sounder (AIRS) mission. The AIRS mission is entering its 11th year of global observations of the atmospheric state, including temperature and humidity profiles, outgoing longwave radiation, cloud properties, and trace gases. The GES DISC, in collaboration with the AIRS Project, released data from the Version 6 algorithm in early 2013. The new algorithm represents a significant improvement over previous versions in terms of greater stability, yield, and quality of products.

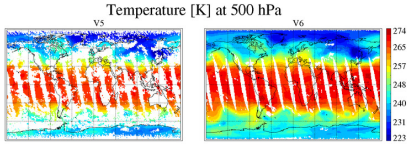
The GES DISC is enhancing its distribution services to handle AIRS Version 6 data. Our primary focus is on popular services such as variable subsetting and quality screening impacted by introduction of new Version 6 elements. Visualization services such as Giovanni, Near-Real Time imagery, and granule-map viewing are being refined as well. We invite cloud properties, model physics, water and energy cycles research, model validation, and other communities to take advantage of the improvements in AIRS Version 6 products and enjoy various services which GES DISC provides.

## SOME SUBSTANTIAL ADVANCES IN VERSION 6

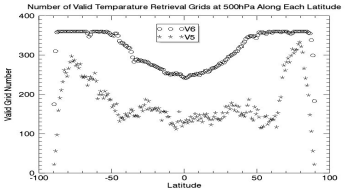
- Improved retrievals of surface spectral emissivity;
- Improved soundings of Tropospheric and Surface Temperatures (including Sea Surface Temperature);
- Larger improvements with increasing cloud cover;
- Near-complete removal of spurious temperature bias trends seen in earlier versions;
- Substantially improved retrieval yield (i.e., number of soundings accepted for output) for climate studies;
- AIRS-Only retrievals with comparable accuracy to AIRS+AMSU (Advanced Microwave Sounding Unit) retrievals;
- More realistic hemispheric seasonal variability and global distribution of carbon monoxide.

**http://disc.sci.gsfc.nasa.gov/AIRS/documentation/**

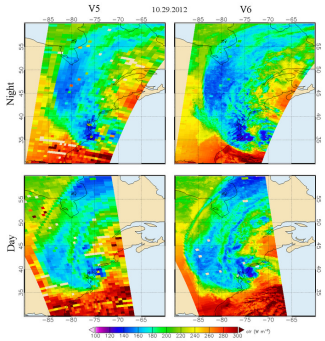
## IMPROVEMENT EXAMPLES




A side-by-side comparison of AIRS daytime (ascending) temperature [K] at 500 hPa from the Version 5 and Version 6 Level 3 products generated for December 25th, 2012 shows the significant improvement in the coverage and yield




Improved retrieval yield is shown in this comparison of number of valid values of AIRS daytime (ascending) temperature at 500 hPa from the Version 5 and Version 6 Level 3 products generated for December 25th, 2012. Improvement is at all latitudes.




OLR of V6 and V5, (QC=0,1) over Hurricane Sandy. In addition to the 45-km OLR, V6 includes OLR at the 13-km (IR) footprint, giving much finer details. Furthermore, V6 is more successful in retrieval under tough cloudy conditions.

## AIRS DATA ACCESS SERVICES

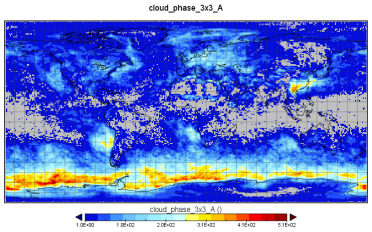
- Download through Mirador AIRS project
http://mirador.gsfc.nasa.gov/cgi-bin/mirador/presentNavigation.pl?tree=project&project=AIRS

- Remote access through OPeNDAP
Level2: http://airsl2.gesdisc.eosdis.nasa.gov/opendap/Aqua_AIRS_Level2/

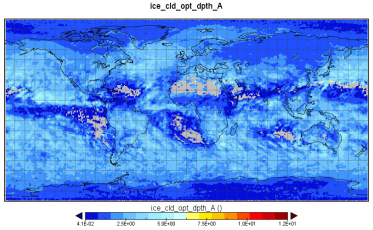
Level3: http://acdisc.sci.gsfc.nasa.gov/opendap/Aqua_AIRS_Level3/

- Search and subset by date and spatial region through Simple Subset Wizard
http://disc.sci.gsfc.nasa.gov/SSW/

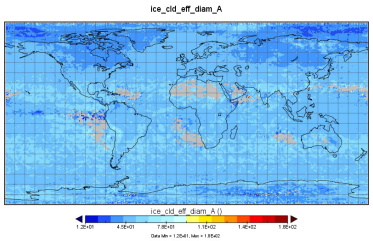
## NEW CLOUD PRODUCTS



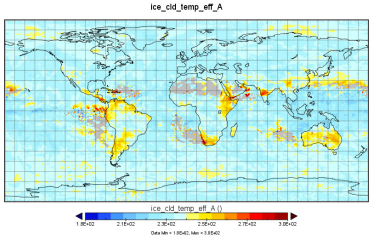

Cloud Thermodynamics Phase
January 2013 daytime (ascending) [counts of observations with cloud phase value -2, i.e., liquid water with high confidence. Use with TotalCounts to get the fraction of observation with any given cloud phase type]




Ice Cloud Optical Depth
January 2013 daytime (ascending) [unitless]

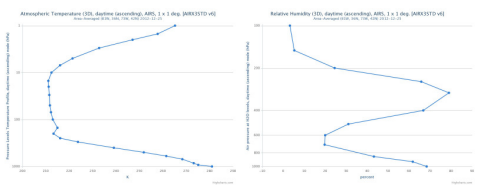



Ice Cloud Effective Diameter
January 2013 daytime (ascending) [microns]




Effective Ice Cloud Top Temperature
January 2013 daytime (ascending) [Kelvin]

## LEVEL 3 PRODUCTS ONLINE VISUALIZATION ON NEXT GENERATION OF GIOVANNI
**http://giovanni.gsfc.nasa.gov/giovanni/**

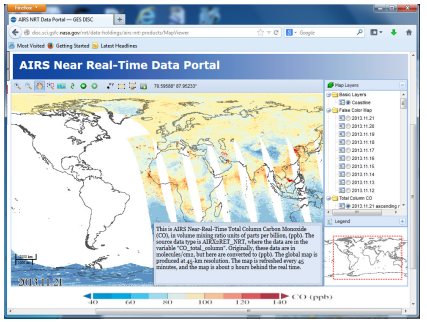


Mid-Atlantic area-averaged vertical profiles of temperature (left) and relative humidity (right) on 12/25/2012 daytime

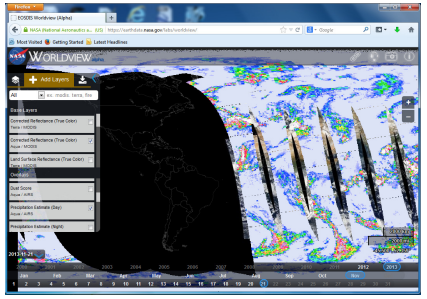
## NEAR REAL TIME AIRS PRODUCTS

The AIRS Near Real Time (NRT) products are currently available for Level-1B and Level-2. The access to AIRS NRT data requires prior user registration on the Land Atmosphere Near real time Capability for Earth observing systems (LANCE).

AIRS NRT MapViewer service at GES DISC
http://disc.sci.gsfc.nasa.gov/nrt/data-holdings/airs-nrt-products/MapViewer




AIRS NRT Worldview visualization service on LANCE
https://earthdata.nasa.gov/labs/worldview/




## CONTACT INFORMATION

Feng Ding: feng.ding@nasa.gov